

## **VI. Conclusions and Recommendations**

In order to ensure that Delaware will have a sustainable and reliable source of water and guarantee a high quality of life for its residents, Delaware could consider adopting an Integrated Water Resource Management (IWRM) strategy. Sustainable management of water resources is contingent upon an integrated, balanced and long-term approach that takes into account several factors. Research at CEEP identified seven components that must necessarily be addressed by any sustainable water resource management plan. These are a clear programmatic focus, inclusiveness of community participation, extent of interagency coordination, water conservation, drought response, inclusion of land-use management and finally consideration given to environmental aspects.

Does Delaware's WRM programs and policies sufficiently address these factors? CEEP's, analysis has shown that Delaware has taken some progressive steps to accomplish the goal of IWRM but there are some areas in which Delaware could be more active in promoting a sustainable water resource management approach. CEEP arrived at this conclusion based on the analysis of the results of the surveys of water resource management (WRM) programs in nine states around the country. The research findings are derived from assessing the state programs against the criteria for sustainable water resource management developed by CEEP.

The research findings from other states will be utilized to suggest possible policy directions and recommendations that CEEP believes will be effective in arriving at Delaware's goal of sustainable water resource management.

### **Research Findings**

The research findings have been categorized below according to the seven criteria developed by CEEP. Best practices in state programs have been explicitly mentioned.

### **Programmatic Goals**

Most of the states surveyed have specific programmatic goals with respect to water resource management. A majority of programs have stipulated maintenance of adequate water quantity and quality as the prime task of WRM. A few states have developed a comprehensive water resource strategy to clearly define the state's objectives and goals. States like Florida, Massachusetts and Washington have enacted special legislation to provide a framework with which the delegated state agency can further the mission of WRM. The study revealed that those states with specific programmatic WRM goals appeared to be in a more favorable position to practice IWRM.

### **Inclusiveness of Stakeholder Involvement**

All the states surveyed allow for active stakeholder involvement in water resource programs. Stakeholders have the opportunity to attend public hearings, round tables and awareness programs. Mandatory public comment periods that are publicized in local media, are an essential component of the permitting process for water resource utilization in most states. In addition,

key stakeholders also possess the opportunity to voice their opinions in advisory/planning committees that possess the authority to steer the state's policy in WRM. Pennsylvania, New York and Virginia possess both statutory and advisory bodies to advise policy makers and to sensitize them to the different aspects of water resources at the state level. Some states (Maryland, Massachusetts, New Jersey and Washington) have focussed on stakeholder participation at the bio-regional level through local watershed associations. Examples of these are Maryland's Watershed Coalition and Massachusetts's Watershed Initiatives. Overall, examination revealed that the broader the level of stakeholder involvement and greater the attention given to public participation, the more successful states were in meeting their WRM goals.

### **Extent of Interagency Coordination**

Given the wide-ranging ramifications of water resource policies on human activities an integrative and holistic approach is essential. Consequently, coordination between agencies separated both thematically and spatially is necessary. In the state programs surveyed, departments of environmental management/protection have usually played a lead role in formulating and implementing policy in most states and the department actions are coordinated with policies of departments of public health, natural resources, public service commission, emergency management agency and economic development. California provides instances of coordination between state and local bodies in WRM. Coordination is also essential with interstate basin commissions like the Delaware River Basin Commission (DRBC) and the Chesapeake Bay Program. Pennsylvania has established the Office for River Basin Cooperation (ORBC) to better coordinate activities involving interstate commissions. CEEP's investigation found that the extent of interagency coordination is an integral part of IWRM success.

### **Emphasis Given to Conservation**

Water conservation is an indispensable component of water resource programs. Many states have adopted a multi-pronged approach to water conservation. Most state conservation strategies include a public education and awareness component that utilizes brochures, bill-stuffers etc., an enhanced water utilization efficiency component that mandates low-flow fixtures and a permitting process that requires water conservation. Some states (New Jersey, New York and Washington) encourage effective water management through pricing structures while others (California, Massachusetts, Virginia and Florida) encourage water reuse and recycling by bulk users. California and Massachusetts have in addition, initiatives to facilitate a greater commitment to conservation. California budgets funds to support conservation and has also instituted a unique performance measurement system to gauge the effectiveness of conservation. Massachusetts has proposed to establish a dedicated program for Water Conservation and establish the position of the Massachusetts Water Conservation Coordinator. The State Water Pollution Trust is also authorized to finance water conservation measures for municipalities.

## **Response to Drought**

The state response to drought usually involves two components: a drought preparedness plan and a drought management plan. Most states that were surveyed possessed, or were in the process of developing, a comprehensive drought management plan. The drought management plan focuses on establishing a task force that monitored water resource conditions and that issued recommendations regarding the severity and extent of drought. Another component of the plan is the creation of an inventory of the voluntary/mandatory restrictions that swing into effect during a drought (as has been done in Chapter 119 of the Pennsylvania Emergency Management Services Code). Further components of drought plans include institutionalization of a clear chain of communication from the local to the state level and plans to provide technical assistance at the local level. California has established an innovative program of a drought water bank to create a market for water in times of shortage. New York possesses a Drought Preparedness Plan in addition to a Drought Management Plan. The preparedness plan requires regular monitoring and enhancement of the emergency equipment stockpile, mandates water purveyors to develop conservation plans and contingency plans in the event of a drought, and the creation of established channels to provide technical assistance to water purveyors. States that took a comprehensive approach to drought were in the position to mitigate and even possibly avoid its debilitating effect.

## **Integration of Land-Use/Growth Management Issues**

Water resource programs in a number of the surveyed states acknowledge the correlation between the sustainability of water resources and effective management of land-use. Some of the states (Maryland and Washington) have statutory obligations in the form of legislative statutes to encourage 'Smart Growth' while in other states (Massachusetts, New Jersey, New York and Pennsylvania) the executive has taken the initiative in implementing effective growth management programs. These programs encourage pro-active community involvement in the protection and renewal of water and other natural resources, provide grants and low interest loans for developing innovative plans that integrate growth planning with resource conservation to eliminate urban sprawl. Investigation found that those states which recognized the link between water resources and land-use planning were in a significantly better position to institute IWRM.

## **Accounting for Environmental Aspects**

In order to effectively evaluate the long-term viability of water resources, and aquatic ecosystems that depend on these resources, it is imperative to monitor the vitality of water bodies. A majority of states surveyed have implemented programs to perform a periodical biological assessment and habitat analysis of water resources within different eco-regions of the state. Maryland's Biological Stream Survey, New York's Stream Biomonitoring Program and Virginia's Biological Monitoring Program are examples. Sampling of benthic macroinvertebrates as indicators of water quality using EPA's Rapid Bioassessment Protocols (RBP) was the common method of biological monitoring adopted by some of the states surveyed. Other biocriteria utilized include fish, diatoms, aquatic vegetation, chlorophyll concentration, algae blooms and canopy cover. Physical and chemical indicators like turbidity,

pH, and heavy metal concentration are also commonly monitored. California's program links instream flows with quality of the water and it employs GIS extensively in accounting for environmental aspects. Corrective actions, including review of withdrawal and discharge permits, are instituted on the discovery of negative environmental indicators. CEEP's analysis discovered that greater commitment to environmental aspects of WRM was a significant determinant of a state's ability to practice IWRM.

## **Study Recommendations**

As a result of its analysis of other state WRM programs, the Center for Energy and Environmental Policy (CEEP) recommends that Delaware consider taking the following actions in relation to these seven criteria.

### **Programmatic Goals/Focus**

A programmatic focus is essential for achieving the goal of sustainable management of water resources. To reach this goal, a holistic and at the same time balanced approach to the utilization and preservation of water resources needs to be considered. Parameters like habitat preservation, demand side management, supply management, waste discharges and land-use have pronounced impacts on both water quality and quantity. These factors can in the long-term have either beneficial or detrimental impacts depending on their weight in the management of the resource. Consequently, the conflicting and reinforcing components that affect water resources must be enunciated and the government's objective vis-à-vis each of these factors must be clearly spelled out. Based on the survey research conducted, CEEP would like to recommend the following:

- ❑ Codify the state's objective vis-à-vis water resource management.
- ❑ Create a unified and integrated strategy to manage water resources in a sustainable manner is essential.
- ❑ Establish a single state entity responsible for formulation of strategy, implementation and monitoring of water resource policies.

### **Inclusiveness of Stakeholder Involvement**

Involvement of constituent stakeholders is acknowledged as being essential for the success of public policy. Participation can have two aspects. Stakeholders can be party to policy formulation at the state level by constituting advisory/statutory panels that voice their recommendations directly to agencies responsible for water resource management. Another aspect is to interact with the concerned state agency in the context of local planning groups. In addition, involvement can be enhanced through inclusion of mandatory public comment and roundtables, as an integral part of the permitting process.

Delaware can empower its citizens by evolving a management environment that facilitates and actively encourages them to contribute to water resource programs. CEEP would like to advocate the following to improve community participation in Delaware:

- ❑ A legislative mandate that requires participation of concerned constituents in regulatory process could be the instrument needed for sensitizing the management about the necessity of participation and also for stimulating the community to play an active role in policy making, implementation, and monitoring processes.
- ❑ Involvement of interest groups can also be fostered through the institution of participatory bioregional planning through strategies like Watershed Coalitions.

### **Extent of Interagency Coordination**

Given the relevance of water resources in the domain of management of economic affairs, human and natural resources, it is imperative to fashion a strategy to manage water resources that weighs the consequences of actions of different state agencies on each other. This can best be achieved by cultivating a coherent and consolidated strategy among several agencies that influence the management of water assets. Further partnership between agencies in the realm of water resources is not limited to intra-state agencies but may also include extra-state and supra-state agencies.

States like Maryland have developed a comprehensive multi-administrative, multi-year agreement between concerned agencies to enhance management of environmental resources like water. On a different front, Pennsylvania has attempted to coordinate between different inter-state agencies by establishing a dedicated office for this purpose. Delaware can follow the example of its immediate neighbors by instituting initiatives to promote spatial and temporal coordination between agencies. The following strategies could be considered:

- ❑ A Water Resources Partnership Agreement could be conceived to provide a forum for interaction and coordination between the numerous state, sub-state and local agencies actively involved in the utilization and preservation of water resources in the state.
- ❑ Coordinate between state and Inter-state agencies like the DRBC, the Chesapeake Bay Program could be enhanced through a dedicated office that liaisons with regional and national agencies.

### **Emphasis Given to Conservation**

Water Conservation is an inseparable component of water resource management. Conservation entails all activities that require reducing the demand for water and also includes activities that enhance the efficiency of use of water.

The comparative research of Delaware and other state conservation programs has made it evident that Delaware's water resource programs with respect to conservation provide much scope for improvement and modification. Some of these prescriptions are compiled below.

- ❑ It would be advantageous to adopt a statewide standard for conservation measures. These measures would introduce uniformity and continuity in the implementation of different conservation measures like public education, universal metering of water etc.

- ❑ Delaware has recently established the position of a Water Coordinator whose duties are to enhance and manage water supplies with limited obligation towards conservation. The duties of the Water Coordinator could be extended to include demand management. An alternative would be to create a separate position for a coordinator of water conservation.
- ❑ Delaware could institute the position of a State Water Conservation Coordinator whose responsibility would be to assist water purveyors with developing and implementing not only conservation programs but also other demand-side management activities.
- ❑ Numerous agencies including inter-state, state and sub-state actors play roles in the water conservation portfolio. Profusion of agencies with divergent agendas and goals has resulted in a stagnating arena for conservation policies. A committed state program on the lines of the Massachusetts Water Conservation and Resource Protection Program could be a progressive step in Delaware's conservation efforts.
- ❑ Delaware's water conservation agenda faces a major obstacle from the financial disincentives associated with conservation. These financial hurdles can be minimized through the use of policy options that employ financial instruments like lost revenue adjustments and cost recovery of demand-side investments. Another option would be to establish a revolving fund similar to the Massachusetts State Water Pollution Trust that provides loans and financial assistance to municipalities and water authorities to finance their conservation plans.
- ❑ Water reuse and recycling result in improved efficiency of water use consequently permitting more water to remain in the natural environment. Delaware has shown limited initiative in this important area and could learn from the policies formulated by Florida and Virginia in this regard.
- ❑ In the absence of a high degree of technical assistance to promote conservation, concrete guidelines for implementation of plans are critical for the effectiveness of conservation policies. Conservation measures if implemented with limited technical capacity can have negative economic consequences.
- ❑ Improve financial and personnel resources available to the state agency for developing conservation data management systems required for linking water conservation with Delaware's environment.
- ❑ Develop a conservation ethic among the public. The state should play an active role in promoting conservation and in increasing awareness about conservation. According to a CEEP study consumers regarded conservation information distributed by a state government agency more seriously than a water purveyor.
- ❑ Implement a performance measurement system to document the amount of water saved as a result of specific water conservation measures.

## **Response to Drought**

Droughts are natural disruptions characterized by a shortage of water resources essential for not only human and economic activities but also for ecological purposes. As a result a drought usually creates an imbalance among uses, which leads to a situation where human and ecological water resource requirement can no longer be adequately met.

Recent droughts in Delaware have exposed the state's vulnerability. An increasing incidence of future droughts is a possibility caused by the increasing demand for water in Delaware and also by climatic uncertainties associated with global warming and weather phenomena like El Nino

and La Nina. Given the periodic occurrence of drought in Delaware, CEEP would like to recommend the following actions to combat drought:

- ❑ Creation of an interagency Drought Response Task Force to oversee both preventive and reactive responses at the state and local levels.
- ❑ Development of a comprehensive Drought Preparedness Plan at the state level which as in New York could include the following components:
  - a. Establishing and regularly maintaining and enhancing the State Emergency Equipment Stockpile.
  - b. Require water suppliers to develop water conservation plans.
  - c. Mandate the development of drought contingency plans by water purveyors. These plans should determine critical water levels, prioritize users etc.
  - d. Arrange and coordinate between state agencies for providing technical assistance at local levels.
- ❑ Development at the state level a drought management plan that comes into play at the first indication of drought. Some the components of this plan could include:
  - a. Implement a standardized set of indicators that demonstrate the onset and progress of droughts such as drought indices, stream flow levels, reservoir levels etc.
  - b. Development of a standardized set of actions that accompany the various stages of drought.
  - c. Documentation of water uses deemed non-essential under various stages of drought.
  - d. Development of a clear chain of communication from local to state levels.
- ❑ Creation of a drought water bank to facilitate purchase of water at times of drought.

### **Integration of Land-Use/Growth Management Issues**

Land-use planning and management are essential in view of the direct relation that exists between land use and the health of water resources. Land-uses that promote sustainable development patterns have minimal impacts on water resources and preserve the robustness of both water resources and ecosystems.

States like Washington, Massachusetts and Maryland have established smart and sustainable growth approaches and have succeeded in effectively coordinating state and local agency actions to strengthen inter-linkages between growth planning and water resource planning. New Jersey, New York and Pennsylvania have also recently unveiled programs to support smart growth initiatives that ensure watershed conservation and restoration. The following recommendations are a result of examining efforts in Delaware and other states.

- ❑ Establishment of precise growth management goals, vis-à-vis water resource preservation and utilization, to guide state and county planning processes.
- ❑ As in the case of New Castle County, a dedicated agency at the state and county level could be responsible for evaluating water resource implications of a development proposal. The agency could be empowered to recommend alternate development methods.
- ❑ State watershed associations possess a stake in growth management issues within the watershed. Consequently involvement of local watershed groups in development of planning missions could be considered.

- ❑ Creation of a state initiative that allocates grants and loans specifically targeted at the development and implementation of sustainable land-use plans as well as initiating community efforts for the preservation and rehabilitation of community water assets like streams and lakes.
- ❑ Research efforts for creating more sustainable land-use patterns can be encouraged and actively supported as a component of water resource management.
- ❑ Enhance public education and awareness programs since they can play a major role in the success of this effort. Ultimately it is the public that must realize the value of effective growth management and choose sustainable patterns of development over natural resource depleting growth strategies.

### **Accounting for Environmental Aspects**

Delaware faces significant environment related issues in water resource management. Some of these problems stem from the state's continuing reliance on supply-side water resource management techniques, its use of the 7Q10 system and the practice of tax-ditching prevalent in Southern Delaware. CEEP would like to make the following recommendations to address these issues:

- ❑ Delaware could stress the need for adopting a sustainable and integrated perspective on water resource management. Such a move would involve reducing the dependence on potentially environment disruptive supply-side efforts and encouraging a reliance on demand management strategies.
- ❑ In the light of questions about the 7Q10 Minimum Flow standard, a rethink of this policy is suggested so that issues concerning uniformity of minimum flow standards and the optimal levels required for ecosystems can be reexamined in the light of new research.
- ❑ Although 'environment friendly' tax ditches are being considered, there remains little doubt that ditching has a very violent impact on the hydrodynamic balance in a watershed. Consequently, research could be undertaken to examine alternatives to ditching.

## Text References

Anderson-Rodriguez, Lynn. 1996. "Promoting Efficient Water Use" in Journal of the American Water Works Association. Jan., Vol. 88, No. 1: 8.

Austin, Lloyd H. 1995. Water in the 21<sup>st</sup> Century: Conservation, Demand, and Supply. Proceedings of the American Water Resources Symposium.

Beecher, Janice A. and Ann P. Laubach. 1989. Compendium on Water Supply, Drought and Conservation. National Regulatory Resource Institute of Columbus, Ohio, Report No. NRRI 89-15.

Cahill, T. H. et al. 1996. "Sustainable Watershed Management at the Rapidly Growing Urban Fringe," in Watershed 96. United States Environmental Protection Agency's (EPA) Office of Water. Available: <http://www.epa.gov/OWOW/watershed/Proceed/cahill.html>.

Center for Excellence in Sustainable Development (CESD). 2000a. "Land-Use Planning: Introduction." Available: <http://www.sustainable.doe.gov/landuse/luintro.shtml>.

Center for Excellence in Sustainable Development (CESD). 2000b. "Land-Use Planning: Strategies." Available: <http://www.sustainable.doe.gov/landuse/lustrat.shtml>.

Center for Excellence in Sustainable Development (CESD). 2000c. "Water Efficiency: Introduction." Available: <http://www.sustainable.doe.gov/efficiency/weinfo.htm>.

Chesnutt, Thomas W. et al. 1996. "Revenue Instability Induced by Conservation Rates," in Journal of the American Water Works Association. Jan., Vol. 88, No. 1: 52-63.

Delaware Estuary Program. 1996. Comprehensive Conservation and Management Plan for the Delaware Estuary.

Featherstone, Jeffrey. 1996. "Conservation in the Delaware River Basin" in Journal of the American Water Works Association. Jan., Vol. 88, No. 1: 42-51.

Global Change. 1999. "Drought Afflicts Eastern US." Available: <http://www.globalchange.org/monitall/99fall7.htm>.

Green Mountain Institute. 1999. "Environmental Indicators." Available: <http://gmied.org/indhome.html>.

Green Mountain Institute. 1997. "Summaries of State Environmental Indicator Initiatives with Completed Resorts." Available: <http://www.gmied.org/summ.html>.

Inter-American Development Bank (IADB). 1998. Strategy for Integrated Water Resources Management. Washington, DC. No. ENV-125. Dec.

IRC International Water and Sanitation Centre (IWSC). 1998. "Towards Integrated Water Resources Management." Available: <http://www.irc.nl/home/wrm/wrmhome.htm>.

Karr, James R. and Chu, Ellen W.. 1998. Restoring Life in Running Waters. Island Press. New York, NY.

Labbe, Colleen. 1997. "Insuring Disaster," in E—The Environmental Magazine. Sept./Oct. Available: [http://www.emagazine.com/november-december\\_1997/1197inbrief.html](http://www.emagazine.com/november-december_1997/1197inbrief.html).

Lancaster County. 1997. "Water Resources Plan." Available: <http://www.co.lancaster.pa.us/Water/html>.

Maddaus, William O. et al. 1996. "Integrating Conservation into Water Supply Planning" in Journal of the American Water Works Association. Nov., Vol. 88, No. 11: 57-67.

Maddaus, William O. et al. 1991. "Integrating Conservation into Water Supply Planning" in Water Resources Planning and Management and Urban Water Resources. Proceedings of the 18<sup>th</sup> Annual Conference and Symposium, ASCE: 647-651.

Mirvis, Kenneth W. and Clark, Neil. 1998. "Assessing the Value of Youth Education" in Journal of the American Waterworks Association. Jan., Vol. 90, No. 1: 64-70.

National Drought Mitigation Center (NDMC). 1999. "U. S. States as Policy Innovators." Available: <http://enso.unl.edu/ndmc/mitigate/policy/govmit.htm>.

National Drought Mitigation Center (NDMC). 1998a. "Drought Contingency Plans." Available: <http://enso.unl.edu/ndmc/mitigate/policy/burec/excontin.htm>.

National Drought Mitigation Center (NDMC). 1998b. "The National Drought Policy Act of 1998." Available: <http://enso.unl.edu/ndmc/new/ndpa.htm>.

National Drought Mitigation Center (NDMC). 1998c. "Impacts of Drought." Available: <http://enso.unl.edu/ndmc/impacts/impacts.htm>.

National Drought Mitigation Center (NDMC). 1998d. "Understanding ENSO and Forecasting Drought." Available: <http://enso.unl.edu/ndmc/enigma/elmino.htm>.

National Drought Mitigation Center (NDMC). 1997a. "A Comparison of Droughts, Floods and Hurricanes in the U. S." Available: <http://enso.unl.edu/ndmc/impacts/compare.htm>.

National Drought Mitigation Center (NDMC). 1997b. "The National Drought Policy Act of 1997." Available: <http://enso.unl.edu/ndmc/mitigate/policy/s222.htm>.

National Drought Mitigation Center (NDMC). 1996. "Drought and Climate Change." Available: <http://enso.unl.edu/ndmc/enigma/cchange.htm>.

National Drought Mitigation Center (NDMC). 1995a. "Drought Mitigation Tools for States." Available: <http://enso.unl.edu/ndmc/mitigate/policy/tools.htm>.

National Drought Mitigation Center (NDMC). 1995b. "Predicting Drought." Available: <http://enso.unl.edu/ndmc/enigma/predict.htm>.

National Governors' Association. 1999. "Principles for Better Land-Use." Available: <http://www.nga.org/Pubs/Policies/NR/nr13.asp>.

National Weather Service (NWS). 1999 "All About Droughts." Available: <http://www.nws.noaa.gov/om/drought.htm>.

Natural Resources Defense Council (NRDC). 1999a. "Urban Stormwater Pollution—Fact and Fiction." Available: [www.nrdc.org/faqs/wastmfic.html](http://www.nrdc.org/faqs/wastmfic.html).

Natural Resources Defense Council (NRDC). 1999b. "The Problem of Urban Stormwater Pollution." Available: [www.nrdc.org/bkgd/waurbstm.html](http://www.nrdc.org/bkgd/waurbstm.html).

Ploeser, Jane H. 1996. "Conservation and the Industrial Customer" in Journal of the American Water Works Association. Jan., Vol. 88, No.1: 64-69.

President's Council on Sustainable Development (PCSD). 1996. Sustainable America: A New Consensus for Prosperity, Opportunity, and a Healthy Environment for the Future. United States Government Printing Office. Washington, DC.

Schueler, Tom. 1994. "The Importance of Imperviousness" in Watershed Protection Techniques. Fall, Vol. 1, No. 3. Center for Watershed Protection. Available: <http://www.cwp.org>.

Schueler, Tom. 1995. "The Peculiarities of Perviousness" in Watershed Protection Techniques. Fall, Vol. 2, No. 1. Center for Watershed Protection. Available: <http://www.cwp.org>.

Smith, John W. and Klemanski, John S. 1990. The Urban Politics Dictionary. ABC-CLIO Inc. Santa Barbara, CA.

Thorpe, Steve, et. al.. 1996. "Impacts of Changing Land-Use," Presented as a working paper at the State of the Lakes Ecosystem Conference (SOLEC). November. Available: <http://www.great-lakes.net/partners/solec/landuse>.

United States Department of Agriculture (USDA). 1999. "Glickman Declares New Jersey and 34 New York Counties as Natural Resource Disaster Areas." USDA News Release No. 0329.99, August 10. Available: <http://www.usda.gov/pas/news/releases/1999/08/0328.htm>.

United States Environmental Protection Agency (EPA). 2000. "Biological Indicators of Watershed Health." Available: <http://www.epa.gov/ceisweb1/ceishome/atlas/bioindicators>.

United States Environmental Protection Agency (EPA). 1999a. "Bioassessment: Introduction." Office of Water. Available: <http://yosemite.epa.gov/water/bioassessment.nsf>.

United States Environmental Protection Agency (EPA). 1999b. "Drought Management." Office of Wastewater Management. Available: <http://www.epa.gov/owm/drouhome.htm>.

United States Environmental Protection Agency (EPA). 1999c. "Guidelines for Water Conservation Plans." Office of Water. Available: <http://www.epa.gov/owm/webguid.html>.

United States Environmental Protection Agency (EPA). 1999d. "Key Concepts for Using Watershed Biological Indicators." Office of Water. Available: <http://www.epa.gov/ceisweb1/ceishome/atlas/bioindicators/keyconcepts.html>.

United States Environmental Protection Agency (EPA). 1999e. "Section 2: Summary of Current State Biological Assessment Programs." Office of Water. Available: <http://www.epa.gov/owow/monitoring/bio/section2.htm>.

United States Environmental Protection Agency (EPA). 1999f. "Why Use Biological Indicators?" Available: [http://www.epa.gov/ceisweb1/ceishome/atlas/bioindicators/why\\_use\\_biological\\_indicators.htm](http://www.epa.gov/ceisweb1/ceishome/atlas/bioindicators/why_use_biological_indicators.htm).

United States Environmental Protection Agency (EPA). 1998a. "How Excessive Water Use Affects Water Quality," in Cleaner Water Through Conservation. Office of Water. Available: <http://www.epa.gov/OW/you/chap2.html>.

United States Environmental Protection Agency (EPA). 1998b. "How to Conserve Water and Use It Effectively" in Cleaner Water Through Conservation. Available: [www.epa.gov/OW/you/chap3.html](http://www.epa.gov/OW/you/chap3.html).

United States Environmental Protection Agency (EPA). 1997. "Managing Urban Runoff," in Nonpoint Source Pointer. No. 7. Office of Water. EPA 841-F-96-004G. Available: <http://www.epa.gov/OWOW/NPS/facts>.

United States Environmental Protection Agency (EPA). 1996. "Key Stormwater Runoff Concerns," in Nonpoint Source News-Notes. Jan./Feb., No. 44. Office of Water. Available: <http://www.epa.gov/OWOW/info/NewsNotes/issues44/nn2hp.html>.

United States Office of Technology Assessment (OTA). 1993. Preparing for An Uncertain Climate. United States Government Printing Office. Washington, DC. OTA-O-567.

Vickers, Amy and Edward J. Markus. 1992. "Creating Economic Incentives for Conservation." in Journal of the American Water Works Association. Nov., Vol. 84, No. 10: 42-45.

Wang, Young-Doo, et al. 1996. Residential Water Conservation Impact Panel Study: Persistence of Conservation Performances of Water Pricing and Demand-Side Management Programs. Newark, DE: Center for Energy & Environmental Policy, University of Delaware.

Wang, Young-Doo, et al. 1994. Integrated Resource Planning Framework For Water Utilities: Applicability and Issues. Newark, DE: Center for Energy & Environmental Policy, University of Delaware.

Western Governors' Association (WGA). 1996. Drought Response Action Plan. November. Available: <http://www.westgov.org/wga/publicat/wgatext1.pdf>.

World Commission on Environment and Development (WCED). 1987. Our Common Future. Oxford University Press. New York, NY.

World Meteorological Organization (WMO). 1999. "1999 Closes the Warmest Decade and Warmest Century of the Last Millennium According to WMO Annual Statement on the Global Climate." Available: <http://www.wmo.ch/web/Press/Press644.html>.

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Cable News Network (CNN). 2000. "Drought Forecast: Wildfires, Water Shortages, Crop Damage." Available: <http://www.cnn.com/2000/WEATHER/03/13/spring.drought.index.html>.

Center for Energy and Environmental Policy. 2001. Economic Implications of Water Conservation-Oriented Rates: Survey of State and Utility Experiences.

Center for Energy and Environmental Policy. 1998. The 1992-97 Panel Study of Residential Water Conservation Impact: Persistence of Conservation Performances of Demand-Side Management Program.

Center for Energy and Environmental Policy. 1997. Whole Basin Management: Policy Implications for Delaware. University of Delaware. Newark, DE. October.

Center for Energy and Environmental Policy. 1996a. Residential Water Conservation Impact Panel Study: Persistence of Conservation Performances of Water Pricing and Demand-Side Management Programs.

Center for Energy and Environmental Policy. 1996b. Growth Management in Delaware: Planning for Delaware's Future. University of Delaware. Newark, DE. February.

Center for Energy and Environmental Policy. 1996c. Water Resource Planning and Conservation in Delaware. University of Delaware. Newark, DE. December.

Delaware Economic and Development Office. "Agricultural Facts." Available: <http://www.state.de.us/dedo/Facts/ag/agmain.htm>.

Delaware Department of Natural Resources and Environmental Control. 2000a. "Water Quality and Quantity." Available: <http://www.dnrec.state.de.us/h2o.htm>.

Delaware Department of Natural Resources and Environmental Control. 2000b. "Protecting and Conserving Delaware's Good Nature." Available: <http://www.dnrec.state.de.us/dnrec2000/Divisions.htm>.

- Delaware Department of Natural Resources and Environmental Control. 1999. "DNREC News." Aug. 12, 1999. Available: <http://www.dnrec.state.de.us/news23tx.htm>.
- Delaware Department of Natural Resources and Environmental Control. 1999. "DNREC News" September 9, 1999. Available: <http://www.dnrec.state.de.us/news27tx.htm>.
- Delaware Department of Natural Resources and Environmental Control. 1997. Piedmont Basin: Preliminary Assessment Report.
- Drought Mitigation Center. "Drought in Delaware." Available: <http://enso.unl.edu/ndmc/impacts/us/delaware.htm>.
- Featherstone, Jeffrey. 1996. "Conservation in the Delaware River basin" in Journal of the American Water Works Association. January, Vol. 88, No. 1: p. 42-51.
- Governor's Cabinet Committee on State Planning Issues. 1999. Shaping Delaware's Future: Managing Growth in the 21<sup>st</sup> Century-Strategies for State Policies and Spending.
- Governor's Water Supply Task Force. 1999. Final Report.
- Ground Water Protection Council. 1999. "Ground Water Report to Congress: Summary of State Ground Water Conditions." Available <http://gwpc.site.net/gwreport/Acrobat/delaware.pdf>.
- Hedges, Carrie. "Mid-Atlantic States Struggle With Drought." USA Today. Dec. 17, 1998. pg. 18A.
- Kauffman, Gerald J. "Anatomy of a Drought." In Watershed Management: Practice, Policies and Coordination. Robert J. Reimold ed. 1998. McGraw Hill: New York.
- Lee, Zhu. 1994. Application of Integrated resource Planning to Water Utilities, Final Summer Internship Report to Delaware Public Service Commission.
- Metcalf & Eddy Inc. 1996. Water Supply Plan for New Castle County, Delaware (Churchmans EIS).
- Montgomery, Jeff. 1999. "Carper Demands Water Plan by Oct. 1," in The Wilmington News Journal. Wed., Sept. 22: A1 and A11.
- Montgomery, Jeff. 1999. "Water Agency Accused of Bias" in The Wilmington News Journal. Thurs. Sept. 23: A1 and A12.
- Montgomery, Jeff and Ungar, Laura. 1999. "Time is Running Out to Fix Water Supply," in The Wilmington News Journal. Tues. Sept. 21: A1 and A7.
- NOAA. "Four States in Northeast Have Driest Growing Season on Record." Aug. 6, 1999. Available: <http://www.noaaneews.noaa.gov/stories/s258.htm>.

State of Delaware Press Release. "Carper Lifts Drought Warning." Feb. 9, 1996.

State of Delaware Press Release. "Governor Carper Declares Drought Warning, Urges Voluntary Water Conservation." July 23, 1999.

State of Delaware Press Release. "Governor Carper Taps State's First "Water Coordinator" and Council to Ensure Long-term Water Supplies in Delaware." February 24, 2000.

State of Delaware Press Release. "Mandatory Restrictions to Help Protect Water Supplies in Northern Delaware." August 5, 1999.

State of Delaware Press Release. "Carper Seeks Drought Related Crop Relief." Aug. 17, 1999.

State of Delaware Press Release. "Carper Reiterates Call for Additional Federal Help to Assist Delaware Farmers." Aug. 20, 1999.

State of Delaware Press Release. "Carper Forms Water Supply Task Force." Aug. 26, 1999.

State of Delaware Press Release. "Mandatory Water Restrictions May Be Lifted this Week." Sep. 7, 1999.

Ungar, Laura and Montgomery, Jeff. 1999. "Pollution Puts Squeeze on Water Supply," in The Wilmington News Journal. Mon. Sept. 20: A1 and A8.

Ungar, Laura. 1999. "Conservation Could Be the Ultimate Answer," in The Wilmington News Journal. Tues. Sept. 21: A7.

United States Geologic Survey (USGS). 1999a. "Estimated Use of Water in the United States in 1995: Summary and Totals." Available: <http://water.usgs.gov/watuse/pdf1995/pdf/summary.pdf>.

United States Geological Survey (USGS). 1999b. "Irrigation water use in the United States, 1990," in Water Science for Schools. Available: <http://ga.water.usgs.gov/edu/wuir.html>.

United States Geological Survey (USGS). 1999c. "Estimated Use of Water in the United States in 1995: Irrigation." Available: <http://water.usgs.gov/watuse/pdf1995/pdf/irrigation.pdf>.

United States Geological Survey (USGS). 1999d. "Domestic Water Use in the United States, 1990," in Water Science for Schools. Available: <http://ga.water.usgs.gov/edu/tables/dldo.html>.

United States Geological Survey (USGS). 1999e. "Estimated Use of Water in the United States in 1995: Domestic Use." Available: <http://water.usgs.gov/watuse/pdf1995/pdf/domestic.pdf>.

United State Geological Survey (USGS). 1999e. "Maryland, Delaware and the District of Columbia." June 30, 1999.

Water Resources Agency, Delaware Geological Survey, and the Delaware Department of Natural Resources. 2000. Final Report: Governor's Water Supply Task Force.

Water Shortage Subcommittee. "The Management of Water Resources in Delaware."  
Prepared under the direction of The Comprehensive Water Resources Management Committee.  
July, 1983.

## State WRM Reference Materials and Contacts

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California Department of Water Resources. 1993. Mission Statement.

California Department of Water Resources. 1998. The California State Water Plan Update Bulletin 160-98: Executive Summary.

California Department of Water Resources. 1998. The California State Water Plan Update Bulletin 160-98: Volume 1.

California Department of Water Resources. 1998. The California State Water Plan Update Bulletin 160-98: Volume 2.

California Department of Water Resources. 2000. “DWR Overview, History, and Programs.” Available at: [http://wwwdwr.water.ca.gov/dir-general\\_informationR2/DWR\\_Overvw\\_History\\_R2.html](http://wwwdwr.water.ca.gov/dir-general_informationR2/DWR_Overvw_History_R2.html).

State Water Resource Control Board (SWRCB). 2000. “Mission Statement.” Available at: <http://swrcb.ca.gov/missions/index.html>.

State Water Resource Control Board (SWRCB). 1999. “Water Recycling Programs” Available at: <http://www.swrcb.ca.gov/recycling/index.html>.

United States Environmental Protection Agency. 1996. “State Biological Assessment Programs: California.” Available at: <http://www.epa.gov/ceisweb1/ceishome/atlas/statebio/ca-bio.html>.

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Florida Department of Environmental Protection. 1995. Florida Water Plan 1995. Available: [http://www.dep.state.fl.us/water/division/waterpol/fl\\_water\\_plan/wpfpwp.htm](http://www.dep.state.fl.us/water/division/waterpol/fl_water_plan/wpfpwp.htm).

Florida Department of Environmental Protection. 2000. Florida Water Plan 1999 Annual Progress Report. Available: <http://www.dep.state.fl.us/water/division/waterpol/FWP%20Progress%20Report/Progress%20Report.htm>.

Southwest Florida Water Management District. 1997. 1996 Annual Reuse Report. Brooksville, Florida.

Southwest Florida Water management District. 2000. District Water Management Plan (final draft). Brooksville, Florida.

Southwest Water Management District. 2000. Water Conservation Strategic Plan. Available: <http://www.swfwmd.state.fl.us/watercon/taskforce/taskforce.htm>.

United States Environmental Protection Agency (USEPA). 2000. Florida Water Information. Available: <http://www.epa.gov/ow/states/FL>.

United States Environmental Protection Agency (USEPA). 2000. Florida Water Quality. Available: <http://www.epa.gov/ow/resources/9698/fl.html>.

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Center for Watershed Protection. 1999. "Rapid Watershed Planning Handbook," Ellicott City, MD.

Chesapeake Executive Council. 2000. "A Citizen's Guide to the Chesapeake 2000 Agreement." Available: <http://www.chesapeakebay.net/c2k.htm>.

Code of Maryland Regulations (COMAR). 26.17.06 Water Appropriation or Use

Maryland Department of the Environment. 2000a. "Water Management Administration Permits," Available: [http://www.mde.state.md.us/permit/permit\\_guide98/water01.html](http://www.mde.state.md.us/permit/permit_guide98/water01.html).

Maryland Department of the Environment. 2000b. "Drought Tips," Available: <http://www.mde.state.md.us/drought/>.

Maryland Department of the Environment. 2000. "Maryland's Environmental Partnership Agreement FY 2000," Available: [http://www.mde.state.md.us/enpa/2000\\_enpa/agreement01.html#top](http://www.mde.state.md.us/enpa/2000_enpa/agreement01.html#top)

Maryland Office of Planning. 2000. "Maryland Growth Commission," Available: <http://www.op.state.md.us/general/op1comms.htm>

Nurse, Leanne. 1996. Expected High August Coliform Count Confirmed in DC's Drinking Water Supply. Press release, U.S. Environmental Protection Agency, Region III. Philadelphia.

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Executive Office of Environmental Affairs. 1992a. "Interbasin Transfer Act: Performance Standards Guidance."

Executive Office of Environmental Affairs. 1992b. "Water Conservation Standards for the Commonwealth of Massachusetts."

Executive Office of Environmental Affairs. 1999. "Massachusetts Watershed Initiative 1999 Program Guide."

Executive Office of Environmental Affairs. 1999a. "Bill to Establish a Water Conservation Act and Efficiency Program."

Executive Office of Environmental Affairs. 1999b. "The Planning for Growth Initiative".

Executive Office of Environmental Affairs. 1999c. "Community Preservation Initiative".

Executive Office of Environmental Affairs. 1999d. "Communities Connected by Water Grants – 1999: A Cooperative offering of the Massachusetts Watershed Initiative and the Planning for Growth Program."

Executive Office of Environmental Affairs. 1999e. "Interim Guidelines on Reclaimed Water."

Massachusetts Environment Policy Act (MEPA). 2000. "MEPA HOME PAGE." Available: <http://www.state.ma.us/mepa/home.htm> - what.

Massachusetts Department of Environmental Protection. 1994a. "Massachusetts Water Resources Management Program 310 CMR 36.00."

Massachusetts Department of Environmental Protection. 1994b. "Water Management Program: Permit Application and Guidelines."

Massachusetts Department of Environmental Protection. 1999. "The Massachusetts Water Management Act Program."

United States Environmental Protection Agency (USEPA). 2000. "State Biological Assessment Programs: Massachusetts." Available: <http://www.epa.gov/ceisweb1/ceishome/atlas/statebio/ma-bio.html>.

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Bureau of Freshwater and Biological Monitoring. 2000. "New Jersey's Ambient Biomonitoring Network." New Jersey Department of Environmental Protection.

Available at: <http://www.state.nj.us/dep/watershedmgt/bfbm/amnet.html>.

New Jersey Department of the Environment. 2000. "Water Resource Management."

Available at: <http://www.state.nj.us/dep/watersupply/wateresc.htm>.

New Jersey Department of the Environment. 1998. New Jersey Department of Environmental Protection's Strategic Plan 1998-2001.

New Jersey Department of the Environment. 1996a. New Jersey Statewide Water Supply Plan—Water for the 21<sup>st</sup> Century: The Vital Resource.

New Jersey Department of the Environment. 1996b. New Jersey Statewide Water Supply Plan—Water for the 21<sup>st</sup> Century: The Vital Resource — Executive Summary.

The New Jersey State Planning Commission. 1999. Communities of Place: The New Jersey State Development and Redevelopment Plan.

Water Supply Administration. 2000. Goals and Objectives. New Jersey Department of Environmental Protection.

United States Environmental Protection Agency. 1996. "State Biological Assessment Programs: New Jersey." Available at: <http://www.epa.gov/ceis/atlas/statebio/nj-bio.html>.

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Executive Order No. 102. 1999. Establishing the Quality Communities Interagency Task Force.

New York State Department of Environmental Conservation. 1988. New York State Drought Plan.

New York State Department of Environmental Conservation. 1989a. Water Conservation Manual for Development of a Water Conservation Plan.

New York State Department of Environmental Conservation. 1989b. Water Resources Management Strategy.

New York State Department of Environmental Conservation. 1992. 20 Year Trends in Water Quality of Rivers and Streams in New York State (Based on Macroinvertebrate Data 1972-1992).

New York State Department of Environmental Conservation. 1993. Public Water Supply Program.

New York State Department of Environmental Conservation. 1996. Quality Assurance Work Plan for Biological Stream Monitoring in New York State.

New York State Department of Environmental Conservation. 2000. "Drought Facts." Available: <http://www.dec.state.ny.us/website/dow/droughtfacts.html>.

New York State Department of State. 2000. "Lt. Governor announces \$1.15 million available to Local Governments: State Assistance Payments To Be Made Through Quality Communities Demonstration Program." Available: [http://www.state.ny.us/governor/lrgov/press99/feb03\\_00.htm](http://www.state.ny.us/governor/lrgov/press99/feb03_00.htm).

New York State Department of State. 2000. Quality Communities Demonstration Program 1999-2000: Request For Applications.

United States Environmental Protection Agency (USEPA). 2000. "State Biological Assessment Programs: New York." Available: <http://www.epa.gov/ceisweb1/ceishome/atlas/statebio/ny-bio.html>.

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Delaware River Basin Commission. 2000. "Delaware River Basin Commission Website." Available: <http://www.state.nj.us/drbc/>.

Pennsylvania Department of Environmental Protection. 1997. "Pennsylvania's Department of the Environment (DEP) Creates New Office for River Basin Cooperation." Available: [http://www.dep.state.pa.us/dep/deputate/polycomm/pressrel/97/97\\_2\\_20\\_14\\_8\\_1.htm](http://www.dep.state.pa.us/dep/deputate/polycomm/pressrel/97/97_2_20_14_8_1.htm).

Pennsylvania Department of Environmental Protection. 1998. "A Guide for PA's Municipal Environmental Advisory Councils." Available: [http://www.dep.state.pa.us/dep/local\\_gov/httoc.htm](http://www.dep.state.pa.us/dep/local_gov/httoc.htm).

Pennsylvania Department of Environmental Protection. 1999. Guide to DEP Permits.

Pennsylvania Department of Environmental Protection. 2000. "Bureau of Watershed Conservation Fact Sheet 2194: Ambient Fixed Station Water Quality Network (WQN) Monitoring." Available: <http://www.dep.state.pa.us/dep/deputate/watermgt/wc/factsheets/wqas/fs2194.htm>.

Pennsylvania Department of Environmental Protection. 2000. "Bureau of Watershed Conservation." Available: <http://www.dep.state.pa.us/dep/deputate/watermgt/WC/wc.htm>.

Pennsylvania Department of Environmental Protection. 2000. "Bureau of Water Supply Management." Available: <http://www.dep.state.pa.us/dep/deputate/watermgt/WSM/wsm.htm>.

Pennsylvania Department of Environmental Protection. 2000. "Drought Terminology." Available: <http://www.dep.state.pa.us/dep/subject/hotopics/drought/dtrterm.htm>.

State of Pennsylvania Press Release. 2000. "Gov. Ridge Unveils Dramatic Environmental Budget -- Implements 'Growing Greener,' Calls For 'Growing Smarter.'" February 8. Available: [http://www.state.pa.us/PA\\_Exec/Governor/Press\\_Releases/000208-6.html](http://www.state.pa.us/PA_Exec/Governor/Press_Releases/000208-6.html).

Pennsylvania Department of Environmental Protection. 2000. "Growing Greener." Available: <http://www.dep.state.pa.us/growgreen/default.htm>.

United States Environmental Protection Agency (USEPA). 2000. "State Biological Assessment Programs: Massachusetts." Available: <http://www.epa.gov/ceisweb1/ceishome/atlas/statebio/pa-bio.html>.

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Chesapeake Bay Program. 1999. "Chesapeake Bay Program Homepage." Available: <http://www.chesapeakebay.net/info/program.cfm>.

City of Richmond, Department of Public Utilities. 2000. "City of Richmond Calls for Voluntary Water Conservation." Available: <http://www.ci.richmond.va.us/water/water2.htm>.

Commonwealth of Virginia, Office of the Governor. 1999. Governor Gilmore Announces Appointments to Regional Open-Space Preservation Advisory Board.

Northern Virginia Soil and Water Conservation District (NVSWCD). 1998. "NVSWCD Homepage." Available: <http://www.gmu.edu/bios/VA/nvswcd/>.

Pelley, Janey and Glen Besa. 1997. "Sprawl Costs Us All." VA Sierra Club Chapter.

Virginia Department of Conservation and Recreation. 1999. "Land Conservation Foundation Announces 1999 Grant Fund Recipients." Available: [http://www.state.va.us/%7Edcr/pr\\_arch.htm](http://www.state.va.us/%7Edcr/pr_arch.htm)

Virginia Department of Environmental Quality. 2000. "Environmental Impact Review." Available: <http://www.deq.state.va.us/eir/>.

Virginia Department of Environmental Quality. 2000. "The Groundwater Protection Steering Committee Homepage." Available: <http://www.deq.state.va.us/gwpsc/mission.html>.

Virginia Department of Environmental Quality. 2000. "Virginia Naturally 2000 Homepage." Available: <http://www.vanaturally.com>.

Virginia Department of Environmental Quality. 2000. "Water Permit Information." Available: <http://www.deq.state.va.us/water/homepage.html>.

Virginia Department of Environmental Quality. 2000. "Water Quality Monitoring, Assessment and Planning." Available: <http://www.deq.state.va.us/water/wqmap.html>.

Virginia Drought Monitoring Task Force. 1999. Drought Status Report.

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Ground Water Protection Council. 1999. "Washington Ground Water Conditions." Ground Water Report to Congress: Summary of State Ground Water Conditions. Available: <http://gwpc.site.net/gwreport/ Acrobat/Washington.pdf>

Mazza, Patrick and Ebon Fodor. 2000. "Watersheds and Salmon" in *Taking Its Toll: the Hidden Costs of Sprawl In Washington State*. Available: <http://climatesolutions.org/pub.html#cleanenergy>

Washington State Department of Community, Trade and Economic Development. 1998. "GMA and Clean Water," Available: [http://www.oed.wa.gov/info/lgd/growth/fact\\_sheets/Clean\\_Water.htm](http://www.oed.wa.gov/info/lgd/growth/fact_sheets/Clean_Water.htm).

Washington State Department of Ecology. 2000a. "Washington State Interagency Ground Water Committee," January. Available: <http://www.wa.gov/ecology/wq/igwc/index.html>

Washington State Department of Ecology. 2000b. "Summary of ESHB 2514, Local Watershed Planning," Available: <http://www.wa.gov/ecology/watershed/2514summary.html>

Washington State Department of Ecology. 2000c. "Water Resources Program." Available: <http://www.wa.gov/ecology/pie/98overvu/98aowr.html>.

Washington State Department of Ecology. 1999a. "Critical Aquifer Recharge Area Ordinance Guidance Document." Available: <http://www.wa.gov/ecology/wq/grndwtr/index.html>.

Washington State Department of Ecology. 1999b. "Implementing the Watershed Planning Act: Report for 1998 & 1999," Available: <http://www.wa.gov/ecology/biblio/99123.html>.

Washington State Department of Ecology. 1998. "Grant program starts new era in water supply planning," Available: <http://www.wa.gov:80/ecology/biblio/98112.html>.

Washington State Office of the Governor. 1999. "Extinction Is Not An Option: Statewide Strategy to Recover Salmon, Core Elements: Habitat," Available: <http://www.governor.wa.gov/esa/strategy/summary/elements.htm>.